existing diversity in the amount of rate levied for education by local authorities, and the varying relation which this amount bears to the total local rates in each area. All the members of the committee are officially connected with the Civil Service.

THE London County Council School of Marine Engineering in High Street, Poplar, has been established to enable persons in the engineering and shipping industries of the Poplar and neighbouring districts to acquire an intimate knowledge of the principles which underlie the work on which they are engaged, instruction being given in physics, chemistry, and mathematics, as well as in the more practical subjects dealt with in the drawing offices, chart room, and engineering laboratories and workshops. The nautical day school is equipped with modern nautical instruments and seamanship models, and a portion of the roof of the building is arranged so as to form an observing terrace for meteorological and astronomical observations. Provision is also made for the thorough teaching of the principles of electrical engineering, and in the chemical laboratories students have opportunities of making investigations in connection with the calorific value of fuels, methods of purifying feed waters, and other subjects. The accompanying illustration shows the navigation room of the school.

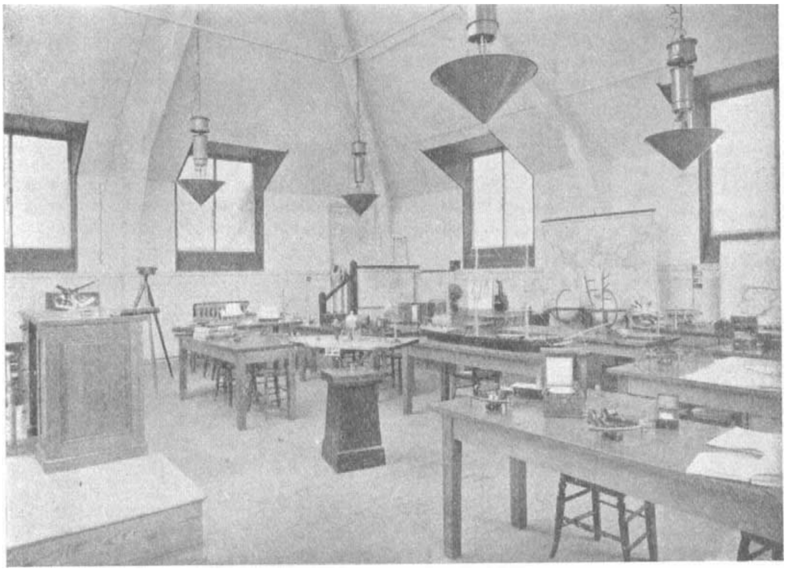

FIG. 1.—Navigation Room of the London County Council School of Marine Engineering, Poplar.

PROF. R. MELDOLA, F.R.S., distributed, on October 11, the prizes and certificates gained during the session 1904–5 by the students of Herold's Institute, the London School of Leather Manufacture. The report of the director of the school, Dr. J. Gordon Parker, was read at the meeting, and showed that during the year a large amount of research work has been done, and the staff of the institute has contributed in no small degree to the important investigation connected with the deterioration of bookbinding leather carried out by the Society of Arts committee on bookbinding leather. Prof. Meldola, replying to a vote of thanks, reminded those present that in other countries there is a direct relationship between technical institutions and the industries. In this country, unfortunately, there is too often indifference or open hostility. Manufacturers have suffered through their unwillingness to modify old procedure and to face new sets of conditions, but it is gratifying to know that hostility to technical instruction is being overcome.

SOCIETIES AND ACADEMIES

LONDON.

Royal Society, May 11.—"On the Cytology of Apogamy and Apospory.—II. Preliminary Note on Apospory." By Miss L. **Digby.** Communicated by Prof. J. B. Farmer, F.R.S.

Apospory is the direct vegetative process which leads from the sporophyte to the gametophyte without the intervention of spores.

The fronds of *Nephrodium pseudo-mas*, Rich., var. *cristata apospora*, Druery, were layered in pans of earth, and soon showed aposporal growth. This arises from the surface and edge of the pinnule, and assumes prothalloid characters. These prothalli have no cushion; the embryo is a vegetative outgrowth.

The nuclear divisions of prothallus and embryo have been studied, and the calculated number of chromosomes is forty-three and forty-one respectively (see Fig.). This approximation undoubtedly proves that there is *no reduction* during the transition from the sporophyte to the gametophyte. A similar result has been obtained in *Athyrium Filix-faemina*, var. *clarissima*, Jones.

The apogamous prothalli of *Nephrodium pseudo-mas cristata apospora* show no nuclear migration, whereas about 73 per cent. of those of *Nephrodium pseudo-mas*, Rich., var. *polydactyla*, Wills,[1] exhibit this phenomenon. This is easily explained. Whereas in the former the nuclei of the aposporously developed prothalli have already the full complement of somatic chromosomes, in the latter

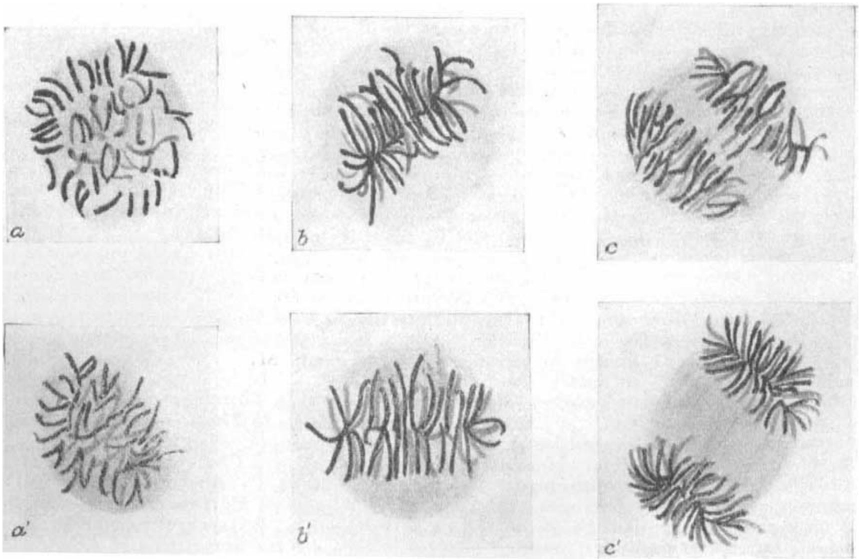

FIG. 1.—Diagrams of nuclear divisions. *a b c* in prothallus. *a' b' c'* in embryo

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[1] J. B. Farmer, J. E. S. Moore, and L. Digby, "Preliminary Note on Apogamy," *Roy. Soc. Proc.*, vol. lxxi., 1903, pp. 453 to 457.

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they have only half the number, as the prothalli germinate from spores, the origin of which undoubtedly involves a reduction. Hence the sporophytic number in that case is regained by migration and subsequent fusion of two prothallial nuclei.

MANCHESTER.

Literary and Philosophical Society, October 3.—Sir William H. Bailey, president, in the chair.—Note on the buccal pits of peripatus: C. G. **Hewitt.** A general outline of the characters of peripatus was given. Recently, tracheal structures had been described in an Australian species, *Ooperipatus oviparus,* in connection with the buccal pits. These pits are formed by the hollowing out of the long, chitinous levers which are attached to the inner pair of jaws; they are continuous with the cavity of the mouth. The paper embodied the results of an investigation into the nature of these buccal pits in *Ooperipatus oviparus* and two other species. It was found that tracheæ do not occur in this region of the body, and that the striated muscle fibres which work the jaw-levers had been mistaken for tracheæ.

PARIS.

Academy of Sciences, October 9.—M. Troost in the chair.—The president announced the death of Prof. Baron de Richthofen, correspondant in the section of mineralogy.—Observation of the total eclipse of the sun of August 30 at Alcosebre (Spain): J. **Janssen.** Just before totality the sky was not absolutely clear, a few light clouds interfering somewhat with the photography of the phases, but some minutes before totality the clouds disappeared, and the whole period of totality was studied under the best conditions. Three good photographs of the corona were obtained by M. Pasteur, M. Millochau was able to obtain photographs of the spectrum of the reversing layer and of the corona, and M. Stefanik made ocular observations on the green ray of the corona and of the extreme red. Numerous photographs of the phases were obtained.—On the creation of an international association for solar studies: J. **Janssen.** A *résumé* of the principal resolutions passed at the recent meeting at Oxford.—On the first volume of the "Catalogue photographique du Ciel," published by the Observatory of Bordeaux: M. **Lœwy.** This catalogue contains the rectilinear coordinates of 49,772 stars relating to a zone comprised between +16° and +18° declination. Details of the methods adopted are given, and a special study of the errors has been made.—On the earthquake felt at Stromboli on September 8, and on the present state of the volcano: A. **Lacroix.** The earthquake of September 8, which caused such disasters in Calabria, was also severely felt at Stromboli, as, although no fatalities resulted in the island, there was hardly a building which remained undamaged. Numerous crevasses appeared, some a metre wide and 20 metres long. Some observations were made on the volcano in eruption at a distance of 150 metres from the crater, special attention being given to the times elapsing between the explosions. It would appear that the more violent explosions are not separated from those preceding by an interval of time specially long.—Observation of the total eclipse of the sun, August 30, made at Guelma, Algeria: E. **Stephan.** The work attempted was limited to direct visual observations, which were carried out under excellent atmospheric conditions.—Spectroscopic researches made during the eclipse of the sun, August 30, at Alcosebre (Spain): Milan **Stefanik.** Details of visual observations are given.—On the observation of the total eclipse of August 30, made at Alcosebre (Spain): G. **Millochau.** The scheme of work proposed included the photographic study of the spectra of the reversing layer and the chromosphere in the luminous region, especially in the red, yellow, and green; the spectrum of the corona in the same region; similar researches in the ultra-violet; photographs during totality with plates sensible to the red rays, utilising a red screen to cut off other radiations. Details of the instruments are given, the full discussion of the results being reserved for a later paper.—On the polarised light of the solar corona: J. J. **Landerer.**—Mathematical groups containing several operations of the second order: G. A. **Miller.**—On some derivatives of cyclohexane: P. **Freundler** and E. **Damond.** The starting point of this work was cyclohexanol, prepared by Sabatier and Senderens' method. This was converted into the monobromo- and monoiodo-derivatives by the action of phosphorus bromide and iodide, and rectifying under reduced pressure. These compounds do not, as a rule, give good yields in condensation with sodium derivatives, an exception being in the reaction with sodiomalonic ester, the yield in this case being 27 per cent.—On the decomposition of meta- and para-nitrobenzylic alcohols under the influence of aqueous and alcoholic soda: P. **Carré.**—On some phenolic ethers with the pseudo-allyl chain $ArC(CH_3)=CH_2$: MM. **Béhal** and **Tiffeneau.**—On sambunigrin, a new hydrocyanic glucoside extracted from the leaves of the black elder: Em. **Bourquelot** and Em. **Danjou.** The existence of this glucoside has been indicated in a previous note, and in the present communication details are given of the method by which the sambunigrin has been obtained in a pure state. The new glucoside appears to be isomeric with the amygdonitrile glucoside of Fischer, from which it differs in its rotatory power.—Statistical researches on the evolution of the size of plants: Mlle. **Stefanowska.** The results are expressed in the form of curves.—Study of the blood in the case of a "bleeder": P. Émile **Weil.** Numerous experiments have been made on the coagulation of the blood from this case. The most important result obtained was the observation that the anomalous coagulation in these cases is not due to the presence of any anti-coagulating substances in the blood, but arises from the absence or alteration of certain normal substances, probably the coagulating ferment. It is sufficient to add traces of normal serum to cause a normal coagulation.—On the direct proofs of the existence of counter trade winds: Lawrence **Rotch** and Léon Teisserenc **de Bort.**

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